

Message Bus Overview

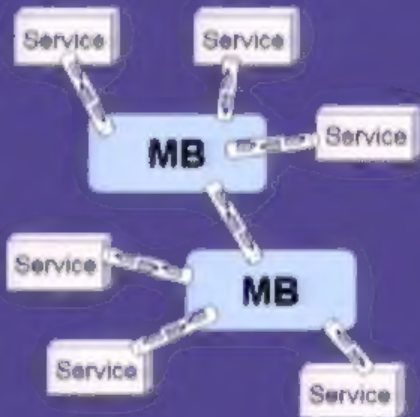
<http://indigo>

Message Bus (MB)

- Mission
 - Make .NET the essential platform for building and deploying any distributed application
- Core values
 - General purpose messaging platform
 - Virtual network
 - Interop across trust domains and platforms

Message Bus Features

- Rich, layered managed framework
 - Both server and EXE application models
- Content-based processing
- Routing and multicast
- Security
- Rich declarative semantics: types, policies, contracts
- Reliable messaging
- Transactions
- COM+ and DCOM interoperability
 - Including object remoting



Agenda

- Content-Based Processing
 - Routing
 - Security
- Message Bus
 - Process architecture
 - Message framework
 - Service framework
- GXA
- Status
- Resources

Content-Based Processing

- MB routes messages to endpoints by matching selected message headers
- Message routes organized around URL hierarchy (URL is "primary key")
 - Enables efficient incorporation and storage of routing information
 - Consistent with Web programming model
- CBP is central paradigm for implementing the MB
- We extend CBP to become the organizing principle for distributed systems
 - Enables load balancing, fault tolerance, aggregate services, client prioritization, distributed security enforcement, etc.

Routing Example (1)

Send(<dest>ws://microsoft.com/dev/medn,
<action>ws://search,...)

Search=> (RoundRobin,
ws://search1/dev,
ws://search2/dev)

Client

Router

DevRTR2

ws://microsoft.com/dev
=>(RoundRobin,ws://DevRTR1/dev,
ws://DevRTR2/dev)

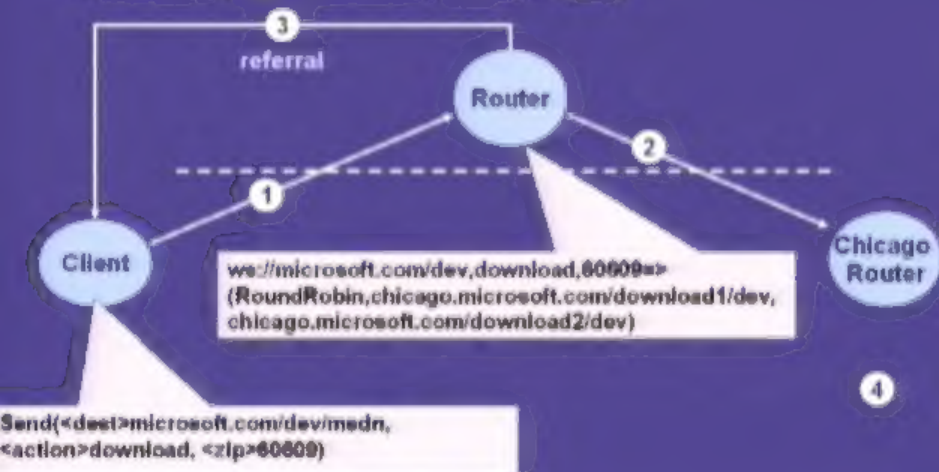
Receive(<dest>ws://search1.microsoft.com/dev/medn,
<action>search)

Search1

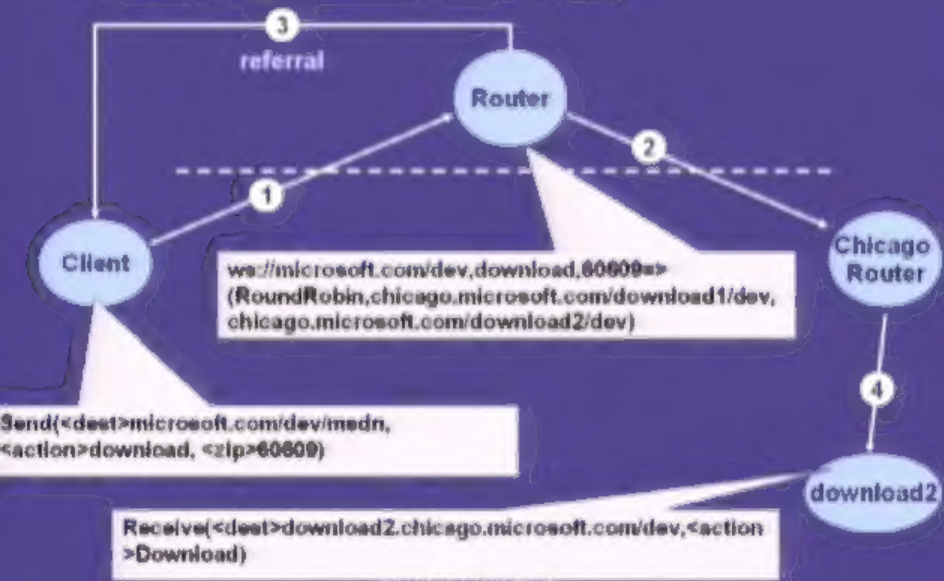
Routing and Referral

- Forward message if referral cache contains a matching entry
- Otherwise, forward to authoritative router
 - Routers may send async referrals back
 - Authorized applications and administrators may send referrals to configure router
 - Can change router data dynamically

Routing Example (2)



Routing Example (2)



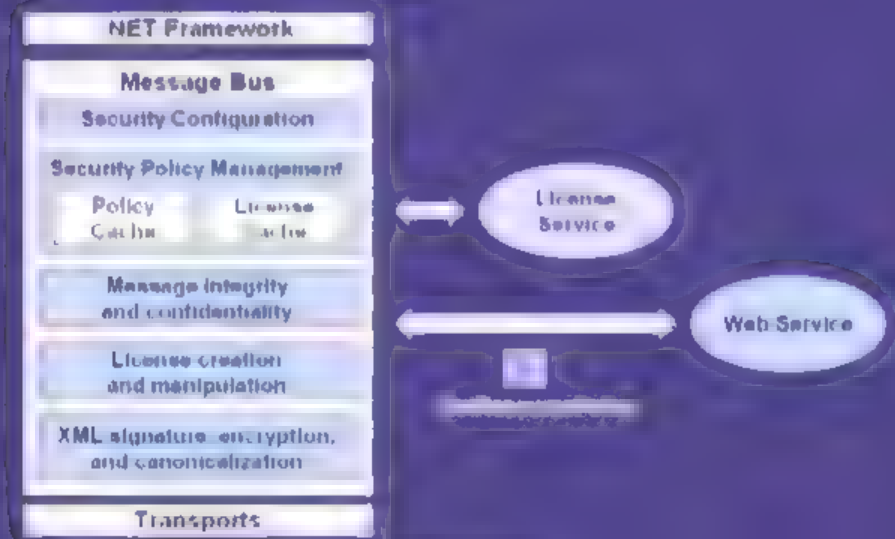
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Key Security Requirements

- Provide a composable security framework for Web services
 - Message integrity
 - Message confidentiality
 - Authentication
 - Authorization
- Integrate with existing mechanisms for identity

Security Detail



Example: Secure Service

Passport

License
Service

Client

CreditCheck

Get Version
License from
Passport File
License Service

Get With License
License service the
license status and
return

Get With License
KerML License

Subsequent
presentation

Example: Global Secure Service

Maltes wants to
provide updates to
their virus and
firewall software
as a Web Service

Maltes wants to use
Amazon to provide
distribution for their
Web Services

vir.com

Admissions

Virtual Desktop

Permissions

Control Panel

virsig

firesig

Coordination with Passport

- Alignment with the MB security model
 - Features added over the next 12-24 months
 - 1.0 protocol work to be OXA-based
- Federation
 - Build on the relevant MB specifications
 - Act as a OXA license server
- Enhance its existing protocol
 - Change the cookie-based protocol to use MB-compatible messages

Coordination with Windows

- 1. Sign in Lighthouse and beyond

- 2. Work under investigation

 - Windows (not) fully trusted or nativey (Vista)

 - Windows domain controllers and certificate authority

 - 1. Kerberos service

 - 1. Negotiate (Kerberos) or Remote Authentication (Kerberos)

 - 2. Negotiate (Kerberos) or Remote Authentication (Kerberos)

 - 2. Internetworkly protocols from MS Network

 - 3. Role based authentication

 - 1. Negotiate (Kerberos) or Remote Authentication (Kerberos)

 - 2. Negotiate (Kerberos) or Remote Authentication (Kerberos)

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DXA

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Microsoft Messaging Stack

- Indigo will provide distributed messaging in the Longhorn API
- Provides features of COM+ services
- Common distributed security model with Passport and Windows

Applications

Scheduling

Storage

UI

...

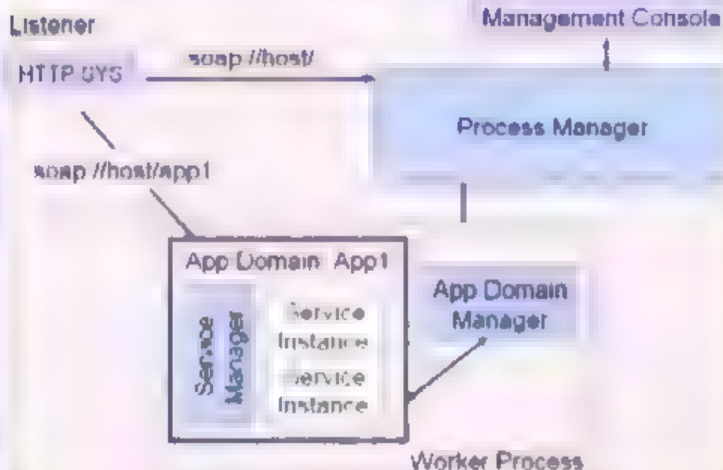
Message Bus

Service Framework

Message Framework
and Infrastructure

Other Windows Components

MB Process Architecture



Listener

Ex: HTTP.sys

- 1 Listens on a transport and passes messages to the router
- 2 For TCP-based protocols, generally owns a TCP port
- 3 Allows processes to register for pieces of the namespace
- 4 Transports vary quite a bit (asymmetric vs. symmetric, stream vs. packet, etc.) and we abstract that

Transport Adapters

- Core dispatcher has no knowledge of transport

 - Web protocols are transport neutral

 - Initial Web Services specified HTTP binding

 - SOAP specifies SOAP and HTTP bindings

- Transport adapter

 - Maps service format to Web message object

 - Listener end - receives incoming messages, creates message objects, and submits them

 - Talker end - takes message objects, creates network buffers, and sends the outgoing message

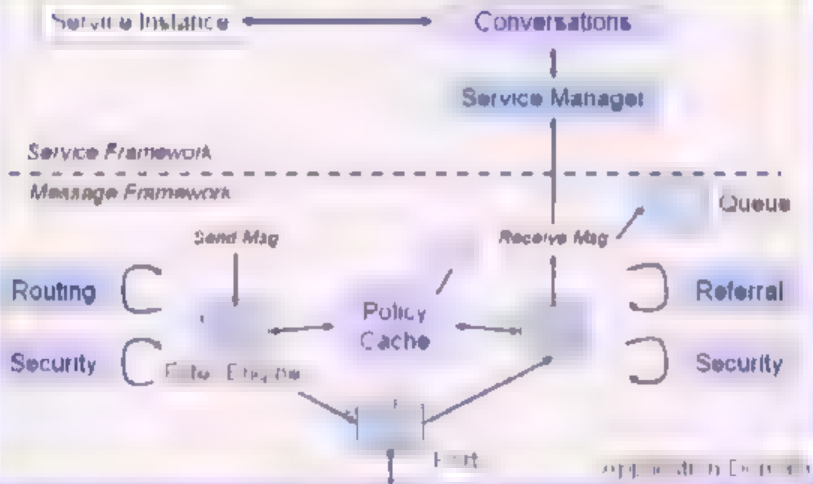
 - Talker and listener do not need to be in the same process

- Anyone can write a transport adapter

Process Manager

- Responsible for managing processes containing application domains
 - Registers with listeners for entire namespace
 - Maps namespace to application code
 - Launches processes in intermediate application domains
 - Manages process recycling and termination
 - Is a router

App Domain Architecture



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- QXA
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Services Framework

- Emphasizes productivity and correctness
 - Constrained set of operations
- Approachable concurrency model
- State management integrated with reliable communications and transactions
- Build on top of Message Framework

Service Instances

When an existing dialog service is created, a new service instance is created:

- When the "Test" (Test) button is pressed, the service instance will be processed

- The "Test" button is pressed, the service instance will be processed

- We will need to implement a way to interact with the service instance (e.g. testing, etc.)

The new service instance will have private service state

Each service instance will own a thread while it is active

Each service instance gets its own BUC

Service Instances (cont.)



Services, Dialogs, and Monologs

- 1. **Services** are used to send and receive messages.
 - **Dialogs** provide bi-directional messaging between two services.
 - **Monologs** provide unidirectional messaging between one publisher and many subscribers.
- 2. **Services send messages using either Dialogs or Monologs.**
 - **Messages** are typed.
 - Both the sender and receiver services must support the same message type.
 - **Dialogs** and **monologs** control the delivery of the messages.



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1 Content-Based Processing

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- Security

2 Message Bus

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- Service framework

3 QXA

4 Status

5 Resources

Global XML Web Services Architecture (GXA)

Business Goals

- Drive XML Web Services as industry-accepted approach to heterogeneous environments

- Technically superior to J2EE cross-platform portability

- Help unblock .NET adoption

- Interoperates with customers' existing investments
- Counters perception that .NET locks in customers

- Generate developer excitement (e.g. SOAP)

Global XML Web Services Architecture (GXA)

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- Drive XML Web Services as industry-accepted approach to heterogeneous environments

- Technically superior to J2EE from platform portability

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- Must permeate that .NET looks like customer

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GXA External Definition

- MS protocol architecture for XML Web Services
- A set of protocol specifications and guidance for how these protocols compose together
- Platform, language, implementation independent
- Licensed for broad adoption
- Submitted to the appropriate standards bodies

GXA Core Services

GXA

Messaging

Discovery

Security

**Reliable
Messaging**

Transactions

SOAP and XML

Internet Transport

GXA Core Messaging

Spec	IBM	Notes
SOAP	Joint	W3C Recommendation in Q3'02
DMR	Joint	Submitted to W3C
WS-Addressing	Joint	Published P02'02, working IBM W3C, IBM to update
WS-Transfer	Joint	Published P02'02, working IBM

GXA Discovery & Metadata

Spec	IBM	Notes
WSDL	Joint	W3C Working Group
UDDI	Joint	Web service directory
WS-Inspection	Joint	Published (2002)
WS-Policy	NBA	Representing, asoping, maning, and exchanging policies
WS-Contract	Internal	Contract language between Web service endpoints

GXA Security

Spec	IBM	Notes
WG-Security	Joint	Released jointly with IBM Version: Send to OASIS
WG-Trust	Internal	Requestious links and manage trust
WG-Secure Conversations	Internal	Exchanging links, checking keys, authentications
WG-Privacy	WG4	Privacy model and policy

GXA Agreements

Agreements	IBM	Notes
WG-Reliable Messaging	Interest	Essentially done, needs delivery
WG-Transaction and WG-Coordination	None	Specified August 2000

Other GXA Activities

- Web Services Interop Org (WS-I)
 - Capture definitions of "Web Services"
 - Define consistent sets of GXA specs
 - <http://www.jaist.org/ws/>
- GXA Design Review
 - US: Apr '02, Europe: May '02
 - Covered core messaging, security, reliable messaging and transaction
 - NDA with 300+ companies

Agenda

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QXA

Status

Resources

Message Bus Status

- Currently in M4 integration and stabilization
- Anticipate
 - 1st production releases after 11/1
 - 2 betas
- M4 coincides with PDC where we will release preview bits
- RTM 1104 with Longhorn client
- Note: We are hiring actively for new test engs

Resources

For more info

- ▶ [Indigo spec](#) (see workbook: overview deck)
- ▶ [Indigo FAQ](#) (for questions about Indigo)
- ▶ [Indigo status on spec](#) and [links to them](#)
- ▶ [Indigo.org](#)

Web Services Development Kit

http://

Keith Ballinger

Program Manager

Web Services Development Kit

Purpose

- **Demonstrate leadership.**
 - ┌ It was infuriating to have IBM beating us to market on our own specs
 - ┌ Drive and visibly lead spec design
- **Customer benefits**
 - ┌ Customer feedback as well
- **Team benefits**
 - ┌ get the specs right by coding against it
 - ┌ build up team expertise (shipping, testing interop testing security)

Mission Statement

***Leading Web services to their full potential
NOW.***

Themes

- **First release is about GXA *Building Blocks***
 - WS-Routing
 - Security: Integrity, Encryption, Credentials
- **What's in V1?**
 - Docs
 - Samples
 - Class Library Functionality
 - Tools

Schedule

- **Beta release set for 8/30**
- **V1 RTW release set for 10/30**
- **Expected V1 RTW – next spring**

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Customers

- **Pri 1: Advanced Web Services Developer**
 - ▮ Advanced Web services developer
 - ▮ Wants a wide variety of additional functionality
 - ▮ Experienced with multiple SOAP APIs
- **Pri 2: Intermediate Web Services Developer**
 - ▮ Typical VB Corporate Developer
 - ▮ Wants certain advanced features
 - ▮ Needs as little pain as possible
- **No support for native**

Customers Scenarios in V1

- **Pri 1**

- Signing messages
- Header-based routing
- Logical names decoupled from topology

- **Pri 2**

- Firewall traversal
- Encryption

Dependencies

- V1 is on top of VS.NET V1
- Toolkit will not replace core functionality
- Features will bolt on the existing framework
 - ▮ Using low-level extensibility points, WebRequest, HTTP Modules, etc

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Compatibility

- **Last release will wire interop with Indigo V1**
 - No programming model guarantees
- **Releases will not be guaranteed to wire interop with previous versions of the toolkit**

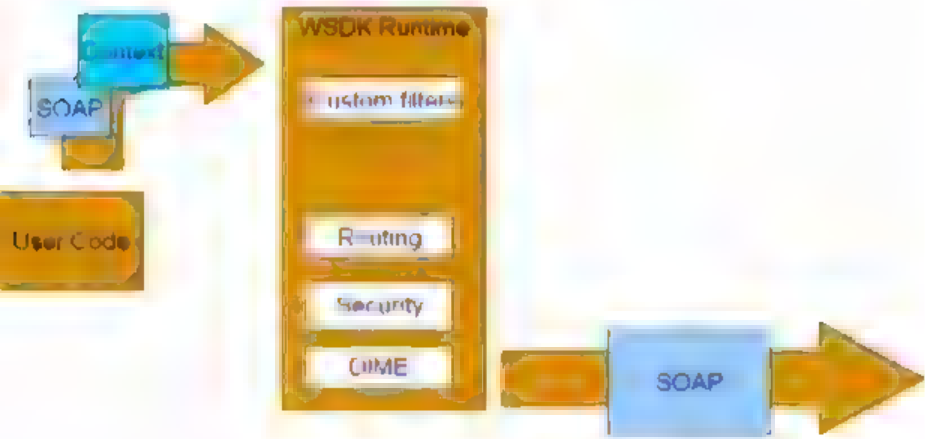
Packaging and Release Vehicles

- Web release on MSDN
- CD for Magazines, etc
- Events

Programming Model

- **SoapContext**
 - Referrals
 - Security
 - .Path
 - Attachments
- **Filled up by user code when sending a message**
- **Read by user code when receiving a message**

Sending a message

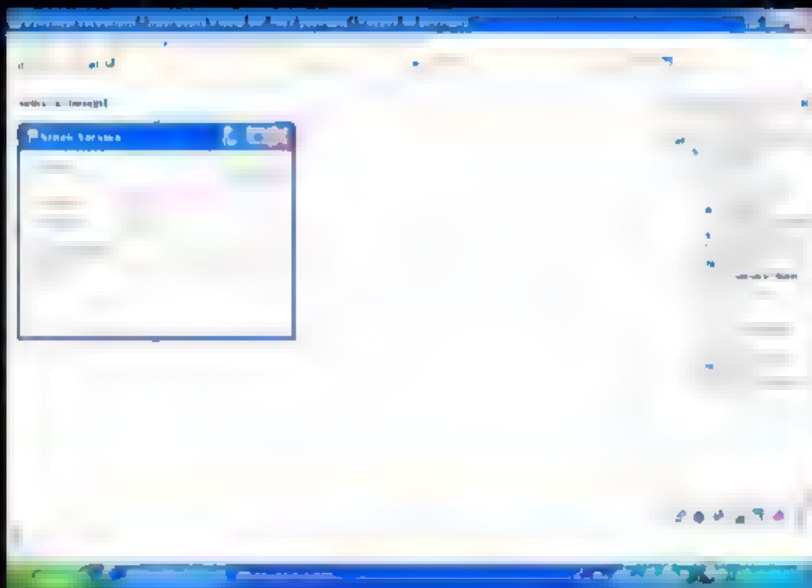


Receiving a message



Demo

- **Let's build a V1 ASP.NET Web service**
- **Then, let's add the WSDK...**
- **Finally, let's add a message expiration**
 - And read it on the other side...



StockService

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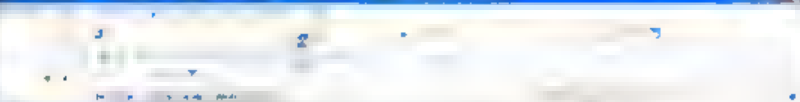
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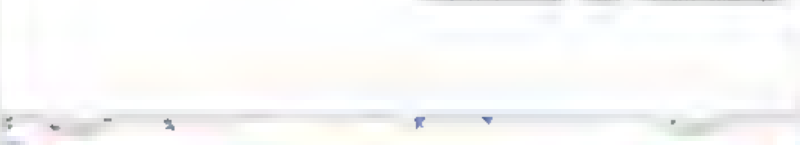
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Stock Service



Item	Price	Quantity	Total
Item 1	100	1	100
Item 2	200	2	400
Item 3	300	3	900
Item 4	400	4	1600
Item 5	500	5	2500
Item 6	600	6	3600
Item 7	700	7	4900
Item 8	800	8	6400
Item 9	900	9	8100
Item 10	1000	10	10000



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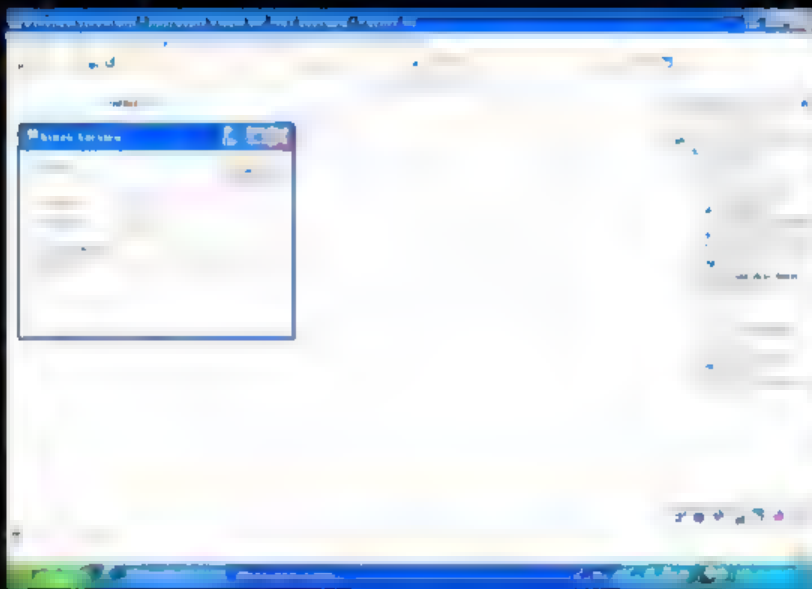
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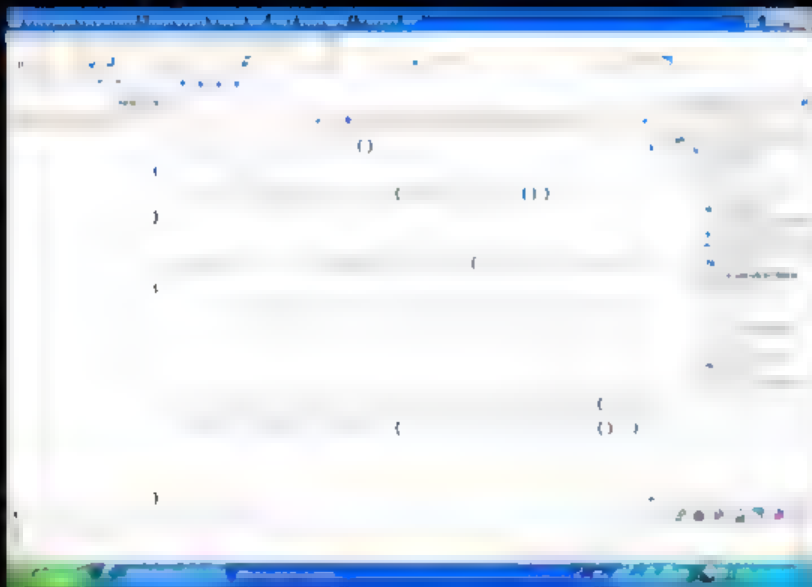
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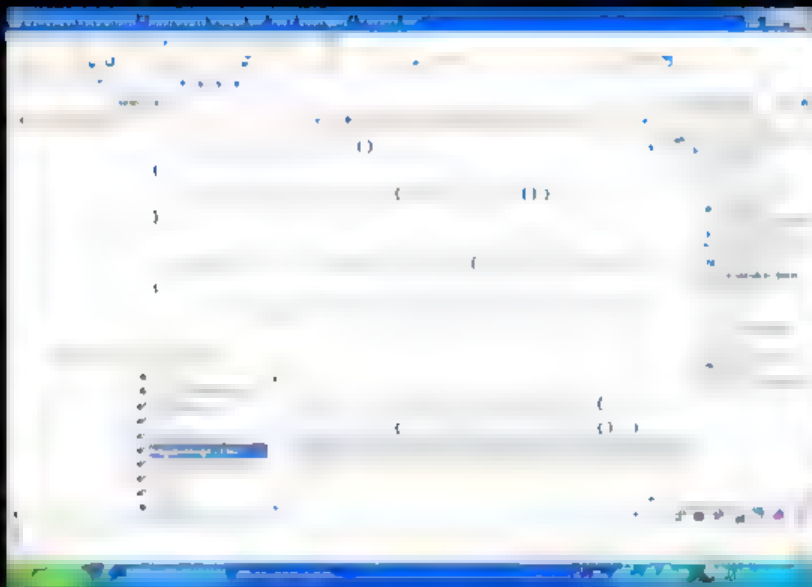
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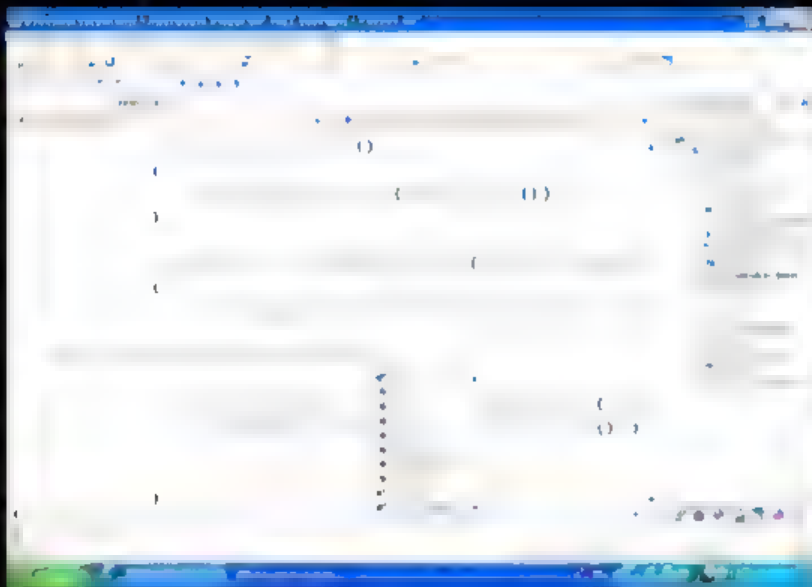
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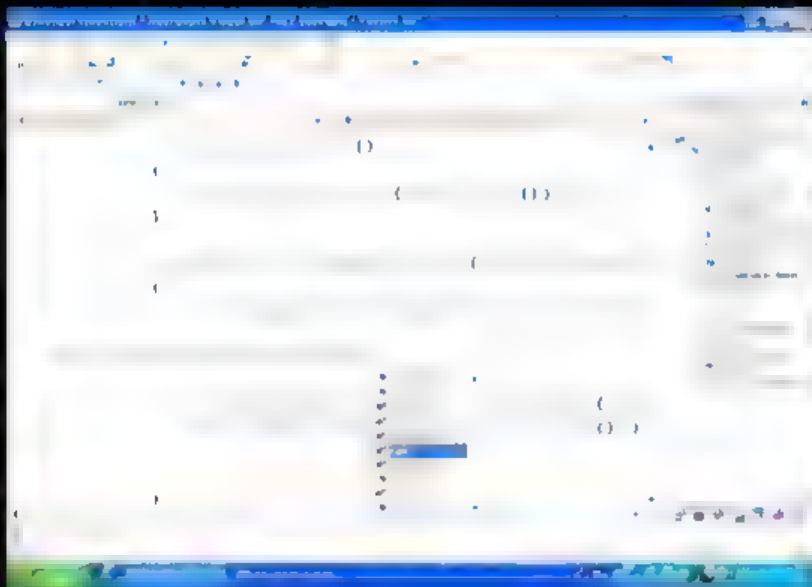
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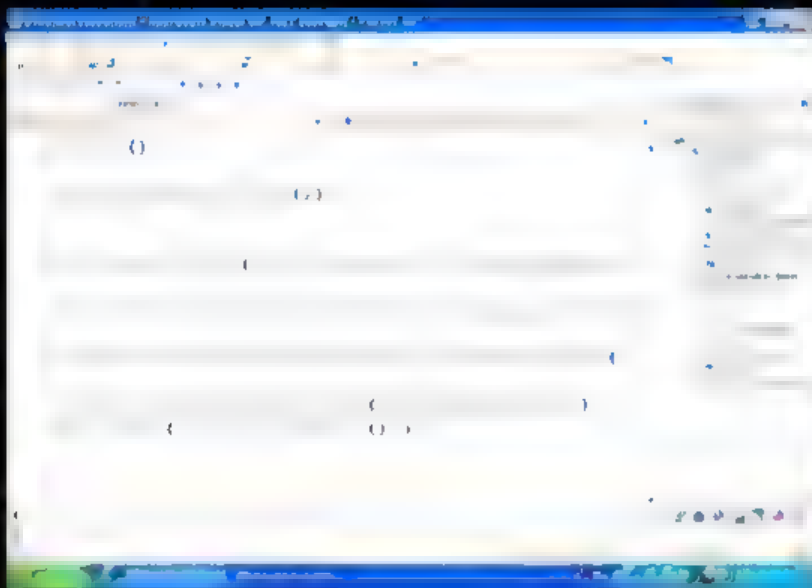
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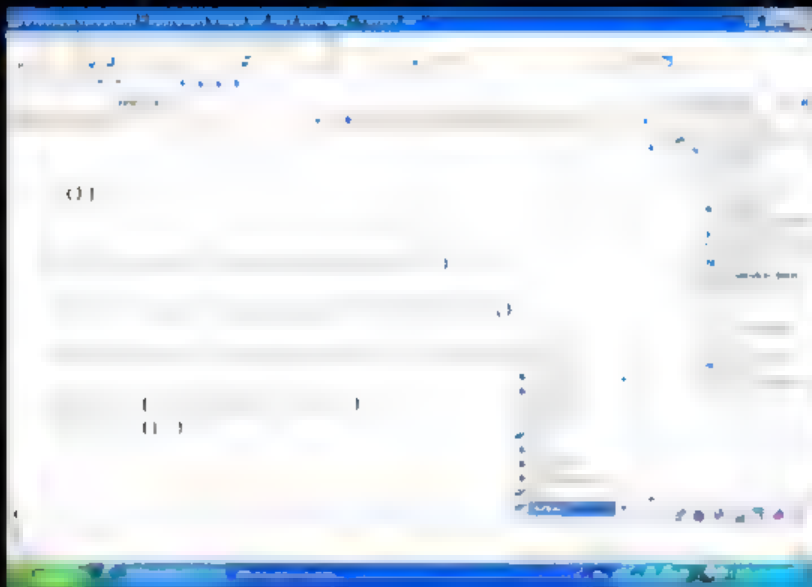
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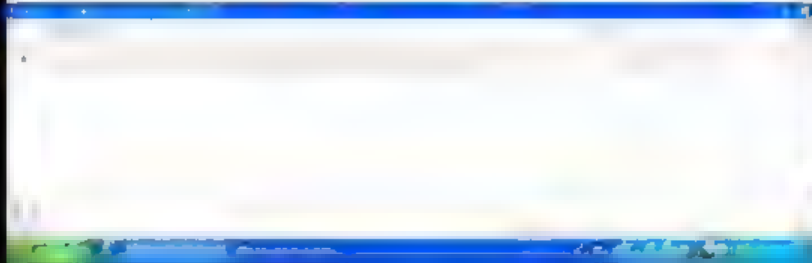
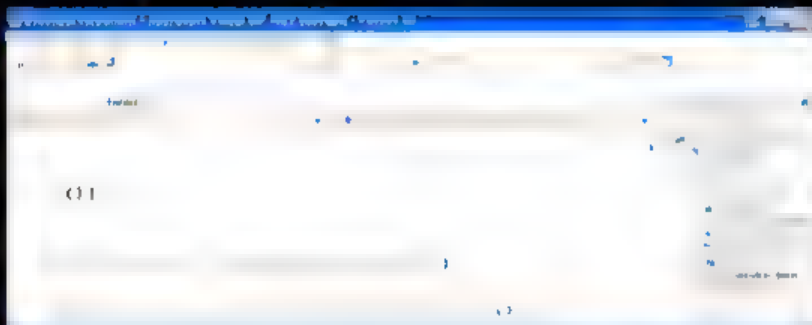
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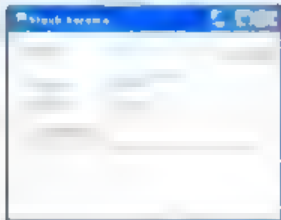
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(1)

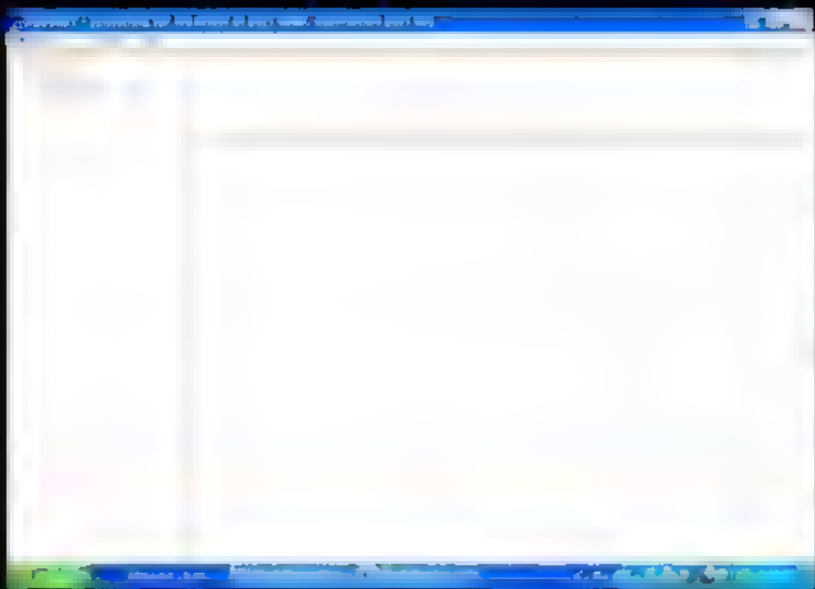




(1)

Table with 5 columns: No, Nama, Alamat, No. Telp, and Pekerjaan. The table contains 5 rows of data.

No	Nama	Alamat	No. Telp	Pekerjaan
1	Andi	Jl. Merdeka No. 10	0812 3456 7890	Programmer
2	Budi	Jl. Sudirman No. 25	0813 4567 8901	Desainer
3	Cici	Jl. Diponegoro No. 30	0814 5678 9012	Marketing
4	Dani	Jl. Soekarno No. 40	0815 6789 0123	Manajemen
5	Eva	Jl. Veteran No. 50	0816 7890 1234	Keuangan

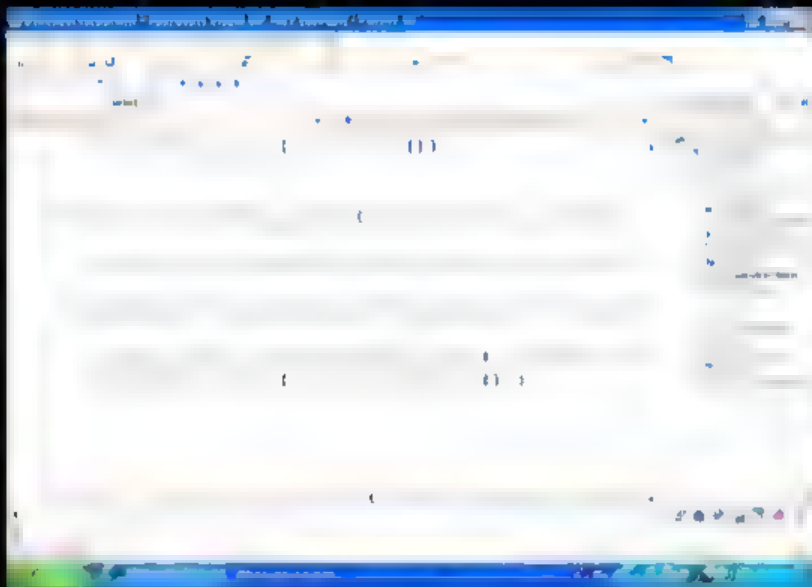


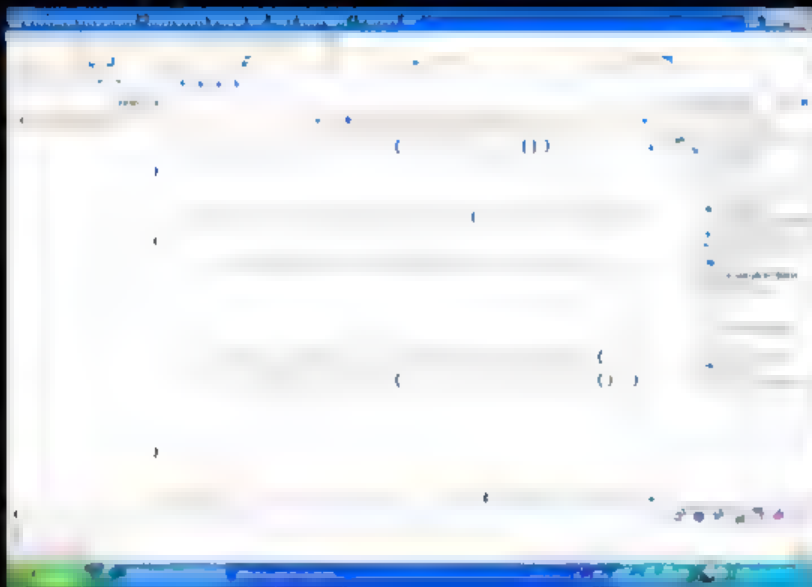
Security Programming Model

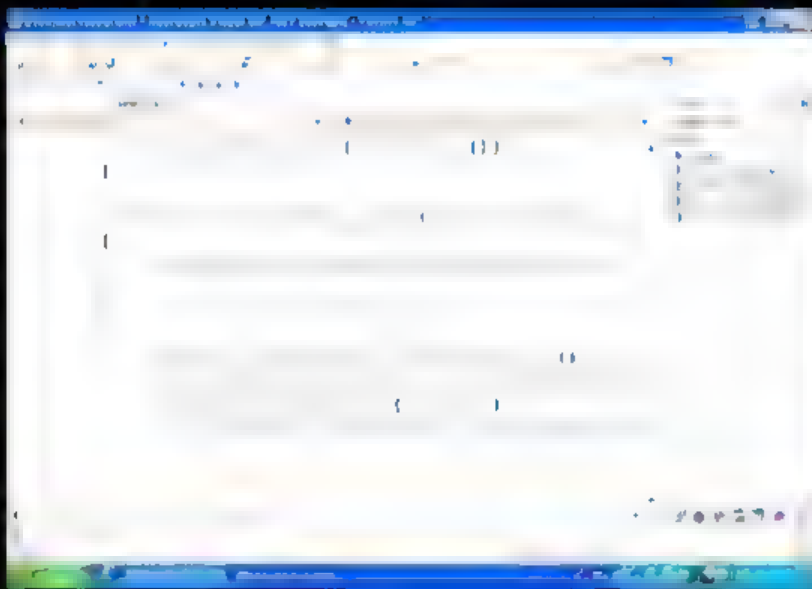
- **SoapContext.Security.Add(Security header)**
- **Create a Security header for a particular actor**
 - ┌ Add tokens
 - ┌ Signatures
 - ┌ Encryption

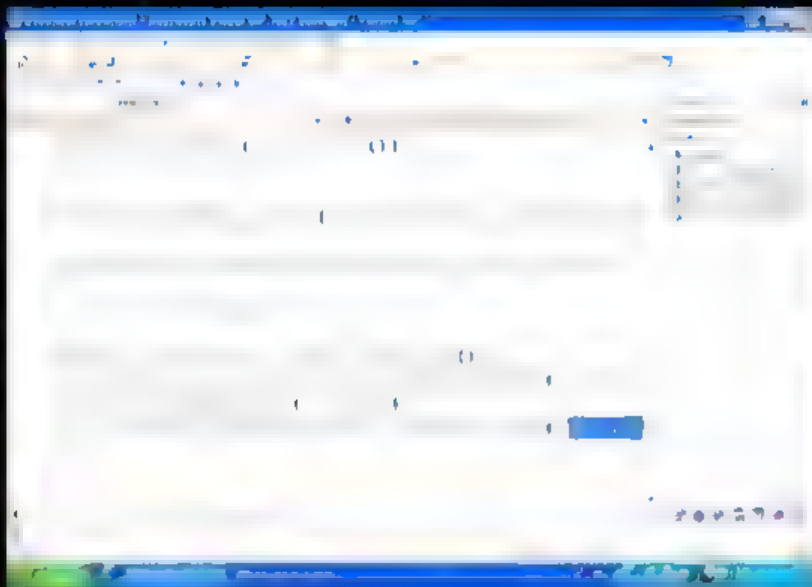
Security Demo

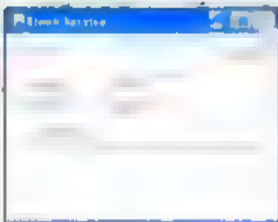
- Let's take our previous demo
- Add a username token
- The verify the token on the server side
- Finally, encrypt the message with an x.509 cert
 - Many other security actions possible, these are just a couple...











id	nombre	apellido	edad	sexo	estado	ciudad	telefono
1	juan	perez	25	M	CD	CD	1234567890
2	maria	garcia	30	F	CD	CD	0987654321
3	carlos	rodriguez	28	M	CD	CD	1122334455
4	ana	lopez	22	F	CD	CD	5544332211
5	pedro	martinez	35	M	CD	CD	9988776655

```
http://localhost:8080/blockService/blockService.action?
cmd=73405b437f1b444b7b0
0d12c5e5014
```

001 07 13733 B4 248

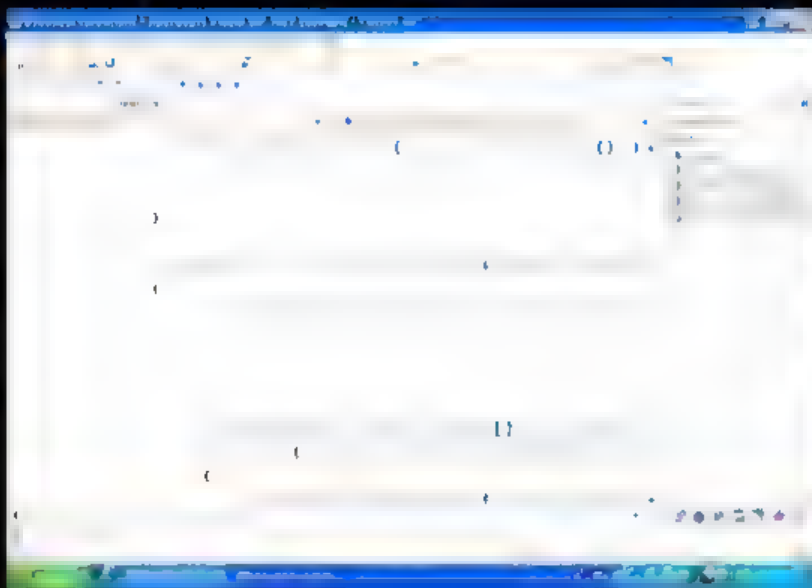
91. **የፌዴራል የሥነ-ጥናት ሚኒስቴር** **ደ/ሪ. ገብረ ገብረ** **ደ/ሪ. ገብረ ገብረ**
የፌዴራል የሥነ-ጥናት ሚኒስቴር **ደ/ሪ. ገብረ ገብረ** **ደ/ሪ. ገብረ ገብረ**

自1980年 4月 29日起 凡 37 人

44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1

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Choose a Certificate below :

11

年	月	日	星期	地点	内容	备注
1980	1	1	星期一	北京	参加全国人民代表大会	
1980	1	2	星期二	北京	参加全国人民代表大会	
1980	1	3	星期三	北京	参加全国人民代表大会	
1980	1	4	星期四	北京	参加全国人民代表大会	
1980	1	5	星期五	北京	参加全国人民代表大会	
1980	1	6	星期六	北京	参加全国人民代表大会	
1980	1	7	星期日	北京	参加全国人民代表大会	
1980	1	8	星期一	北京	参加全国人民代表大会	
1980	1	9	星期二	北京	参加全国人民代表大会	
1980	1	10	星期三	北京	参加全国人民代表大会	
1980	1	11	星期四	北京	参加全国人民代表大会	
1980	1	12	星期五	北京	参加全国人民代表大会	
1980	1	13	星期六	北京	参加全国人民代表大会	
1980	1	14	星期日	北京	参加全国人民代表大会	
1980	1	15	星期一	北京	参加全国人民代表大会	
1980	1	16	星期二	北京	参加全国人民代表大会	
1980	1	17	星期三	北京	参加全国人民代表大会	
1980	1	18	星期四	北京	参加全国人民代表大会	
1980	1	19	星期五	北京	参加全国人民代表大会	
1980	1	20	星期六	北京	参加全国人民代表大会	
1980	1	21	星期日	北京	参加全国人民代表大会	
1980	1	22	星期一	北京	参加全国人民代表大会	
1980	1	23	星期二	北京	参加全国人民代表大会	
1980	1	24	星期三	北京	参加全国人民代表大会	
1980	1	25	星期四	北京	参加全国人民代表大会	
1980	1	26	星期五	北京	参加全国人民代表大会	
1980	1	27	星期六	北京	参加全国人民代表大会	
1980	1	28	星期日	北京	参加全国人民代表大会	
1980	1	29	星期一	北京	参加全国人民代表大会	
1980	1	30	星期二	北京	参加全国人民代表大会	
1980	1	31	星期三	北京	参加全国人民代表大会	

Printed: 04/10/2010

04/10/2010

State
Indicate below :

Year	Area	Value	Unit	Value	Unit	Value	Unit
2008	Area	100	sq. km	100	sq. km	100	sq. km
2009	Area	100	sq. km	100	sq. km	100	sq. km
2010	Area	100	sq. km	100	sq. km	100	sq. km
2011	Area	100	sq. km	100	sq. km	100	sq. km

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Chapter 10: The Cell

Section 10.1: The Cell and Its Components

Section 10.2: The Cell Cycle

Section 10.3: Cellular Differentiation

Section 10.4: The Nervous System

Section 10.5: The Endocrine System

Section 10.6: The Immune System

Section 10.7: The Circulatory System

Section 10.8: The Respiratory System

Section 10.9: The Digestive System

Section 10.10: The Excretory System

8b3

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Header>
    <wsse:messageTimes
xmlns:wsse="http://schemas.xmlsoap.org/ws/2002/01/ws
gext">
      <wsse:created>2002-07-12T22:38:05Z</wsse:created>
      <wsse:messageTimes>
      <wsse:Security soap:mustUnderstand="1"
xmlns:wsse="http://schemas.xmlsoap.org/ws/2002/04/se
cext">
        <xenc:EncryptedKey
type="http://www.w3.org/2001/04/xmlenc#EncryptedKey"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#">
          <xenc:EncryptionMethod
Algorithm="http://www.w3.org/2001/04/xmlenc#rsa-1_5">
```

```
<wsse:created>2002-07-12T22:38:05Z</wsse:created>
</wsse:messageinfo>
<wsse:Security soap:mustunderstand="1"
xmlns:wsse="http://schemas.xmlsoap.org/ws/2002/04/se
cext">
  <xenc:EncryptedKey
Type="http://www.w3.org/2001/04/xmlenc#EncryptedKey"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#"
  <xenc:EncryptionMethod
Algorithm="http://www.w3.org/2001/04/xmlenc#rsa-1_5"
  >
    <KeyInfo
xmlns="http://www.w3.org/2000/09/xmldsig#"
  <KeyName>CN=KEITHBA4.redmond.corp.microsoft.com</Key
Name>
    </KeyInfo>
    <xenc:CipherData Nonce="8">
      <xenc:CipherValue>atBQ+buH5gJRxDm86Noh+1JGbnWrJzpy/
9e0W9+Ohv7BOAmpqbuxxqFF9TrhrWEz71.v9TpKND9JfghZfB3E
1777+12xi1vXMc+Yc fpx/gY6t8tpr0Qhhjt+mK01ix1Of.hqpy710
```

```

<wsse:created>2002-07-12T22:38:05Z</wsse:created>
  </wsse:messageInfo>
  <wsse:Security soap:mustUnderstand="1"
xmlns:wsse="http://schemas.xmlsoap.org/ws/2002/04/se
cext">
    <xenc:EncryptedKey
Type="http://www.w3.org/2001/04/xmlenc#EncryptedKey"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#">
      <xenc:EncryptionMethod
Algorithm="http://www.w3.org/2001/04/xmlenc#rsa-1_5"
>
        <KeyInfo
xmlns="http://www.w3.org/2000/09/xmldsig#">
          <KeyName>CN=KEITHBA4.redmond.corp.microsoft.com</Key
Name>
        </KeyInfo>
        <xenc:CipherData Nonce="8">
          <xenc:CipherValue>atB0+buHhsgJRxDm86Noh+1JGbnWr1zpy/
9oDw9:Ohv7BOAmpqbUxxqFF9TrihrWEz71:V9TpKND9JfghZf83E
1777+1Zx11vXMC+Yc1px-gy6L8LprOqhhl+mK011x10LhQpy710

```

```
mas.xml - Notepad
File Edit Format View Help
Type="http://www.w3.org/2001/04/xmlenc#Content"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#"
  <xenc:EncryptionMethod
Algorithm="http://www.w3.org/2001/04/xmlenc#triplede
s-cbc" />
  <xenc:CipherData Nonce="16">
<xenc:CipherValue>QSRMBDYafzmZOFXvncIYdgan2ak2IA0K71
mzDZj1x0Di7cw+XU7SmMLcfVnJqdsPEtwq0IKmfNfbuffgygKr7G
XQvrhkDhFHYI4x7M3lHtMljjcwnI3ZkTwa0iQ3Hgb7jP2vutCgyu
xzeR2c8PEox7tfYiFSxRDSUQZ8ostV6mDwnPjHtCjqxEpTicqSLs
LNDxrPKadJOjwm5X9sbQvH847Zk6ewSHQLKAt7BoKh6ousDgQd3h
nkLUBAQhFIYG+wU2wzqXePOwJ9MRC0/qSEdR/cpP74ozGf8cx1U1
YLVQnn+v8RjJAfguvB4acLg8fUNKlcGdaDNGdGs+2bUPHYHa13c6
KtxS2E8rNmtKNCwav7Zou0Bbk9VLNY9QYNRA+JjgFncVQwqTc=</
xenc:CipherValue>
  </xenc:CipherData>
</xenc:EncryptedData>
</soap:Body>
</soap:Envelope>
0
```

Security Demo

- Let's take our previous demo
- Add a username token
- The verify the token on the server side
- Finally, encrypt the message with an x.509 cert
 - Many other security actions possible, these are just a couple...

Security Demo

- Let's take our previous demo
- Add a username token
- The verify the token on the server side
- Finally, encrypt the message with an x.509 cert
 - Many other security actions possible, these are just a couple...

Q & A

- Questions?
- My contact info: KeithBa@microsoft.com
- Website: <http://xws>
- BTW, we are always looking for good testers:

